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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re United States Patent Application of:		Docket No.:	4241-198 CON
Applicants:	BARETZ, Bruce H. and TISCHLER, Michael A.	Examiner:	Abul Kalam
Application No.:	10/623,198	Art Unit:	2814
Date Filed:	July 18, 2003	Conf. No.:	2836
Title:	SOLID STATE WHITE LIGHT EMITTER AND DISPLAY USING SAME	Customer No.:	23448

DECLARATION OF BRUCE H. BARETZ AND MICHAEL A. TISCHLER UNDER 37 CFR §1.131 IN U.S. PATENT APPLICATION NO. 10/623,198

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

We, BRUCE H. BARETZ and MICHAEL A. TISCHLER, hereby declare:

1. THAT we are co-inventors of the subject matter disclosed and claimed in United States Patent Application No. 10/623,198 filed July 18, 2003 in the United States Patent and Trademark Office in the names of Bruce H. Baretz and Michael A. Tischler and entitled, "SOLID STATE WHITE LIGHT EMITTER AND DISPLAY USING SAME" (hereafter referred to as the "Application"), which was filed as a continuation of United States Patent Application No. 08/621,937 filed March 26, 1996 in the names of Bruce H. Baretz and Michael A. Tischler for "SOLID STATE WHITE LIGHT EMITTER AND DISPLAY USING SAME," on which U.S. Patent No. 6,600,175 issued on July 29, 2003.

2. THAT the Application discloses and claims the invention of a liquid crystal display ("Invention") as specified in the following currently amended independent claim 70 of the

Application, from which all other pending claims 31, 33-36, 44, 47-48, 51-52, 71 and 73-76 of the Application directly or indirectly depend:

> 70. A liquid crystal display comprising a back light structure including at least one LED/phosphor assembly in which the LED is energizable to emit radiation and the phosphor is arranged to be impinged by radiation from the LED so that the LED/phosphor assembly produces white light back light illumination for the liquid crystal display.

3. THAT we have been informed by our legal representative that during a recent review of the Application by the United States Patent and Trademark Office, Japanese Patent Application H07-176794 filed in the name of Yoshinori Shimizu and published on July 14, 1995 ("Shimizu") has been identified as relevant to the pending claims of the Application.

4. THAT we have been informed by our legal representative that Shimizu can be removed as prior art to the claims of the Application by presenting evidence to the United States Patent and Trademark Office by us of our claimed Invention prior to the earliest effective date of Shimizu, and that said earliest effective date has been identified to us by such legal representative as July 14, 1995 (such date hereafter being referred to as the "Shimizu Effective Date").

5. THAT attached as Exhibit I hereof is a true and exact copy, as redacted, of the cover page and pages 18-20 of a document entitled "Light Emitting Diodes Die Independent Emission (LED-DIE): Business Plan" and subtitled "Solid-State White Light & True Color Illumination. An Advanced Illumination Technology Based on Passive Organic Fluorescence Technology Coupled With Innovative Light Emitting Diode Fabrication," bearing the name of Bruce Baretz as President & Chief Science Officer, Advanced Illumination Technologies, and containing the legend "Written by Keen Solutions, Inc., with a date that has been blacked out ("[redacted]"),but which date is prior to the Shimizu Effective Date.

6. THAT the Exhibit I document (hereafter referred to as the "Business Plan") was prepared by one of us, BRUCE H. BARETZ, as a principal of Keen Solutions, Inc., and transmitted to Advanced Technology Materials, Inc., Danbury, CT ("ATMI"), which at that time was the employer of the other of us, MICHAEL A. TISCHLER, for the purpose of eliciting the interest of ATMI in commercializing our Invention.

7. THAT the Business Plan discusses our Invention in the following passages:

"..it is desirable for these GaN diodes to excite a selected set of fluorescers impregnated within the polymeric dome of the LED lamp. These fluorescers would simultaneously be excited by the photons emitted from the LED die and re-emit the light in a broad spectrum of emissive wavelengths. When properly designed, the light would be essentially tuned to cover a broad spectrum that would appear as white light." (page 18, lines 11-17),

with light emitting diodes die independent emission (LED-DIE) being discussed with reference to "the presently large variety of organic and inorganic fluorescers that exist" (page 19, lines 14-15), and

"white light LED lamps based on single UV or blue GaN diode dies" (page 20, lines 26-27) in "white light LED lights bars" (page 20, line 30) for "backlighting for LCD screens" (page 20, lines 34-35) being specified.

8. THAT we cooperated with ATMI and its legal counsel in the preparation, and filing on March 26, 1996, of United States Patent Application No. 08/621,937, the parent of the present Application in which our Invention is disclosed and claimed.

9. THAT we offer this Declaration as evidence of our possession of the Invention prior to the Shimizu Effective Date.

As a below-named declarant, I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements, and the like so made, are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the present application or any patent issued thereon.

Bruce H. Baretz
BRUCE H. BARETZ

28-AUGUST-2009
DATE

MICHAEL A. TISCHLER

August 26, 2009
DATE

EXHIBIT 1

Light Emitting Diodes Die Independent Emission (*LED-DIE*): Business Plan

■

Solid-State White Light & True Color Illumination. An Advanced Illumination Technology Based on Passive Organic Fluorescence Technology Coupled With Innovative Light Emitting Diode Fabrication.

■

Bruce Baretz
President & Chief Science Officer

Advanced Illumination Technologies

Written by Keen Solutions, Inc.
First in Illumination Technologies
77 Vreeland Road
W MILFORD NJ 07480
[redacted]

Advanced Illumination Technologies Business Strategy

Die Independent Emission Technology

Many optoelectronic companies are developing a core center of excellence in the fabrication of GaN p-n junction that would ultimately offer illumination in the ultraviolet or in the blue. While research groups elsewhere have succeeded in obtaining blue light from similar systems, the ATMI research team has a unique vision that is expected to dramatically enhance production yields and product performance. Ultimately, it is desirable for these GaN diodes to excite a selected set of fluorescers impregnated within the polymeric dome of the LED lamp. These fluorescers would simultaneously be excited by the photons emitted from the LED die and would re-emit the light in a broad spectrum of emissive wavelengths. When properly designed, the light would be essentially tuned to cover a broad spectrum that would appear as white light. This down conversion of photon energy can be accomplished in a manner that does not effect the total emission efficiencies and as such the fluorescers play a passive role in the generation of the

white light. The key R&D elements are related to identifying fluorescers with short lifetimes that are blended in a manner that allows for emission over a selected profile.

While the technology can generate white light, which provides its primary market benefit, there are other products and benefits that can be ascribed to the technology. As an example, LED lamps that are presently in the marketplace have a very narrow emission profile and are limited to those compositions that provide reasonably good charge electron-hole recombination. In fact, there is very little variation in colors that are presently available, despite the plethora of manufacturers and value added repackagers. The *LED-DIE* re-emission technology provides the opportunity to offer a series of designer colors of LED products limited, only by the presently large variety of organic and inorganic fluorescers that exist. The designer series is expected to appeal to manufacturers of automotive and consumer products where exacting coloration specifications exist to either create or maintain a certain marketing image.

In addition, the *LED-DIE* technology offers the unusual benefit of using a single die to create an infinite series of colors. Hence, a manufacturing facility need focus on producing only one LED die and convert the end product, the lamp, at the last stage of production. Of course, for this strategy to make economic sense, the manufacturing cost of the preferred LED die must be (ultimately) competitive with those presently on the market and used to produce the commodity LED lamps.

Keen Solutions, Inc. has pioneered this innovation based on its expertise in organic luminescent systems. Coupled with ATMI's semiconductor skills, or by utilizing substrates procured through third-party relationships managed by Keen Solutions, the development of these hybrid devices should offer unparalleled (and rapid) expansion of the technology into product concepts. It will be rather exciting to observe this simple technology innovation be built into a strong patent portfolio with a realistic opportunity to introduce a broad line of products based on a critical core technology. What is most intriguing at the present time is that this pioneering field of die independent emission appears to involve a field unrecognized by others in their pursuits of LED product improvements.

Research & Development

The R&D effort is expected to be limited in formidable challenges; nevertheless, a considerable amount of applied research accomplishments need to be realized in order for the technology to be development. At its most basic level, the effort will focus on the development of a "potting blend" that will include the appropriate mixture of fluorescers, encapsulating polymers and compatible anti-oxidants or stabilizers. While the work will focus on a complete set formulations blend to maximize performance and define optimal specifications, very little research will be required on the underlying p-n junction. (In fact, Keen Solutions has been developing relationships with potential suppliers of "off-spec" blue LED dies).

The plan projects an initial R&D expense of $500,000 (please see forecasted balance sheet) for Advanced Illumination Technologies to sufficiently develop the technology. Included with this proposal is a proposal from Keen Technologies Limited to perform contract R&D on behalf of the venture in order to accelerate product development. It is expected that Keen Technologies would offer organic photochemical expertise and research services to insure that the proprietary technology is developed in a wide-ranging manner and to provide new products more efficiently and rapidly than internal product development.

White Light Markets

The primary focus of this business plan relates to the marketing of white light LED lamps based on single UV or blue GaN diode dies. It is envisioned that a white light LED discrete lamp will be a direct replacement for small incandescent lights (that provide warm "white" light). Further, the technology is expected to be extended to the production of white light LED lights bars, that will be direct replacements for miniature fluorescent lights, as well as the plethora of (presently) colored alphanumeric displays used in consumer and industrial products. The markets that these direct replacements lamps will be positioned within are: backlighting for LCD screens (light bars), signage lamps (discrete lamps), interior and exterior lighting (light bars), automotive lighting (interior and exterior), instrument lighting, and safety lighting. The broad marketing opportunity related to the white light LED business is